

Math 527B – Spring 09
Homework 2 : Due Feb 4

2.1 Problem 4.1.32, Pg. I-186 of the class notes.

2.2 In each of the following, find appropriate hypothesis on ϕ that ensure that the limit exists, and identify the limit in terms of objects you know.

(a)

$$\lim_{a \rightarrow 0} \int \frac{x}{a^2 + x^2} \phi(x) dx$$

(b)

$$\lim_{a \rightarrow 0} \int \frac{2ax}{a^2 + x^2} \phi(x) dx$$

(c)

$$\lim_{a \rightarrow 0} \int \frac{a^2 - x^2}{(a^2 + x^2)^2} \phi(x) dx$$

2.3 Problems 4.1.33 and 4.1.34, Pg. I-186 of the class notes.